

- Crews from the Take Action program have inspected the boat now and have found attached mussels. Based on photos these appear to be either Zebra or Quagga mussels (both are equally bad news). Samples are being sent to the RBCM and Idaho for positive identification. We also hope to be able to determine if they had been dead for some period and what their reproductive condition was.
- Crews did not confirm that there were any living mussels attached but they were not able to inspect the inner workings of the boat (cooling system etc.) and some of the mussels removed still look relatively fresh. They have now received permission from the owner to enter the boat, fully inspect and decontaminate it.
- The Invasive Species Council crew are planning to move a portable 'hotwash' decontamination station to the marina to undertake the decontamination. The boat owner is fully co-operating.
- If we adopt the protocols used in Idaho, the boat should be left dry for 30 days after decontamination- the boat owner is likely to object to this as he feels it was in the dry for almost a month before being launched in BC. However, if we find damp areas with mussels internally, this previous dry period would be considered moot.
- Given the uncertainty as to whether viable mussels were present on the boat at the time it was launched in Shuswap Lake, we discussed the possible containment steps that need to be considered (note that the boat did not leave the marina which is a fairly contained area).
 - Any boats being pulled out of the water should be decontaminated. 'Take Action' Crews are being mobilized for this purpose although the marine operator is expressing some concerns.
 - A diver should be used to inspect the piers and bottom in the area the boat was moored to see if any mussels moved onto the piers or dropped off the boat. We're asking DFO if they have any ability to support this.
 - Sampling for larval mussels should be conducted as soon as possible and continued every week or two through the summer. We have the gear, need to mobilize staff.
 - Given the high consequences if mussels do become established in Shuswap, we need to consider whether or not the marina bay should be screened off (isolated) and the area treated to kill any mussels present. This would obviously inconvenience all boaters at the marina and the business itself but the risk may warrant such a drastic action.
- Another conference call is planned for tomorrow to discuss information being collected over the next 24 hours and to determine a recommended course of action. DFO is being kept apprised.
- We can expect the media to pick up on this at some point especially once decontamination activities start (probably not until early next week as equipment has to be moved from the Kootenays). We are working with FLNRO staff on messaging but have not directly discussed with GCPE at this point.

Best case scenario here is that all the mussels were dead and we don't have a problem. Worst case would be missing the opportunity to contain viable mussels at the marina and having them become established in Shuswap resulting in the decimation of fisheries stocks including key sockeye stocks.

Ted Down

Conservation Science
250-387-9715

From: Down, Ted ENV:EX
Sent: Wednesday, July 4, 2012 3:51 PM
To: Dale, Alec ENV:EX
Cc: Wilson, Andrew S FLNR:EX; Woodruff, Patricia FLNR:EX
Subject: Invasive mussel issue on Shuswap Lake

Hi Alec- it seems to be invasive species day. This is just a heads up but this could get media attention. We are still actively working on this so I don't have all the answers yet but:

- We have a recreational boat that was transported from Arizona to BC that had visible mussels attached when it was removed from the water in May.
- There are papers indicating it went through a decontamination procedure designed to remove mussels in Arizona
- However, when the boat went through Idaho, officials there noted that there were fresh looking mussels still attached to the hull. They did a 'hot wash' but were not satisfied that the boat was fully decontaminated. They could not legally hold the boat as it was not destined for Idaho waters. They informed Matthias as the provincial contact.
- s.22 The boat was put in the water at a Shuswap Lake marina. Staff there apparently noted the mussels and attempted to remove them s.22
- Patricia Woodruff (still officially working for Andrew) was forwarded the original message yesterday and has worked to have the boat removed from the water- which it now has been (although it was in the water for a week). Regional COs and DFO fisheries officers have been informed and have been very helpful.
- We don't know at this stage if there were any viable mussels left on the boat when it went in the water or not. It was out of the water for more than 3 weeks according to the papers which should have been sufficient but the Idaho report causes concern. If they are still viable, we won't know if they spawned or not but if we collect samples we may be able to assess maturity.
- Crews from the clean drain and dry program (provincial funding) are being dispatched to evaluate and decontaminate.
- The boat owner has been tracked down s.22 and is cooperating but is concerned with potential costs to him and delay in his plans to use the boat in a week or two. He has been informed that the boat must be checked first but that this will likely not delay his plans. He may have to pay for an additional launch fee which I believe should be his responsibility given the circumstances. We may be pushing our jurisdiction here but the risk is too high.
- The implications here are incredibly high. Pelagic species like sockeye would be the most impacted by a mussel invasion as the mussels would filter most of the nutrients out of the lake and convert them to mussel biomass. The Adams River sockeye run, for example would likely be greatly diminished over time. Once established in Shuswap, they could easily invade downstream in the Fraser as well.
- If viable mussels are found on the boat, we would likely want to step up assessment in Shuswap and try to control mussels before they can be established. I'm not sure how effective this could be.

You may want to pass this onto GCPE now or could wait for more confirmation. You might also want to give Mark a heads-up.

Patricia has done a great job coordinating the response to this- trial by fire!

Ted Down, Ph.D., RPBio
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Miller, Val FLNR:EX

From: Miller, Val FLNR:EX
Sent: Monday, June 25, 2012 12:35 PM
To: Herborg, Matthias ENV:EX
Subject: Fwd: !!! This weekend's Lake Pleasant to BC boat

s.22

Skotch creek is on the Shuswap, right? The faster the list is updated, the better, eh?
Val
Sent from my iPad

Begin forwarded message:

From: s.16
Date: 25 June, 2012 9:30:03 AM PDT
To: "Herborg, Matthias ENV:EX" <Matthias.Herborg@gov.bc.ca>, S16, S22

s.16, s.22

Subject: !!! This weekend's Lake Pleasant to BC boat

This commercially hauled boat was intercepted at the Malad over the weekend. It originated at Lake Pleasant. It had decontamination paperwork, but many fresh-looking mussels were still evident. Please note that it came up I-15 into Idaho, traveled into Montana, and was inspected again at the I-90 westbound (Cedars) station yesterday. The Cedars inspectors noted many mussels still attached. The Spokane POE was notified, but it is unclear if it was detained there.

We recommend that BC have a good look at this boat before it is allowed to launch. We hotwashed it, but do not consider it decontaminated, it has not been out of the water for long. We were unable to hold the boat because it was commercially hauled and not destined for Idaho.

①

From: S16
Sent: Saturday, June 23, 2012 6:39 PM
To: S16 Matthias.Herborg@gov.bc.ca
Cc: s.16, S22
Subject: Fouled Vessel

S16

Our Malad inspection station intercepted a fouled vessel being commercially transported to British Columbia.

The details are below:

Vessel is a 25-30' white cabin cruiser with white and black stripes. Vessel was last in the water very recently at Lake Pleasant.

No registration on Vessel but the VIN number is s.22

The vessel is being delivered to:

s.22 Scotchcreek, British Columbia.

Transporters name is s.22 (Yacht Transport) no phone number listed s.22
s.22

Plate on Tractor is s.22 trailer is s.22

Idaho station staff did complete a hotwash of the boat.

Thanks

S16

(2)

S16

Miller, Val FLNR:EX

From: Miller, Val FLNR:EX
Sent: Thursday, July 5, 2012 6:46 PM
To: Borth, David FLNR:EX
Cc: Grilz, Perry L FLNR:EX
Subject: Zebra Mussel Issue update #2

Hi David – here is an update on the current situation with the potential zebra mussel incursion on Shuswap Lake. My apologies for the length. In order to ensure consistent messaging to FLNR and MOE Executives, I have included bullets provided by MOE. The items in black were forwarded from MOE fisheries section (Ted Down) up to Mark Zacharias, ADM and their Minister yesterday. Bottom three Bullets are part of the update Ted has forwarded to key MOE directors and ADM this afternoon. I am going to begin drafting a joint early warning note with Ted, and given the current flurry of invasive related media this week, GSPE needs to be informed.

- A recreational boat was transported from Arizona to BC that had visible zebra/quagga mussels attached when it was removed from the water in late May.
- There are papers indicating it went through a decontamination procedure designed to remove mussels in Arizona.
- However, when the boat went through Idaho, officials there noted that there were fresh looking mussels still attached to the hull. They did a 'hot wash' but were not satisfied that the boat was fully decontaminated. They could not legally hold the boat as it was not destined for Idaho waters. They emailed Matthias (Aquatic Invasive Species Coordinator – MOE) as the provincial contact as a head's up on June 25th.
- s.22 The boat was put in the water at a Shuswap Lake marina. Staff there apparently noted the mussels and attempted to remove them.
- MOE Staff (TA) was forwarded the original message on July 3rd and immediately worked with Regional COs and DFO fisheries officers and had the boat pulled out of the water.
- Regional Fisheries staff in the Thompson office are aware of the issue and ready to assist as needed.
- The boat owner has been tracked down s.22 and is cooperating but is concerned with potential costs to him and delay in his plans to use the boat in a week or two. He was informed that the boat must be checked first but that this will likely not delay his plans (however, given conversations today, a 30 day dry storage is necessary – see below)
- The Boat was in the water for one week. As of last night, the owner confirmed it was placed into its mooring location at the marina and had not been moved at all during that week.
- The boat was out of the water for more than 3 weeks prior to entering the Shuswap, according to the inspection papers. This should have been sufficient time to desiccate mussels, but the Idaho report causes concern. According to US experts, minimum dry period of 30 days is necessary, and any wet/moist areas inside the boat, bilge, motor, lines would still potentially have live adult or larval mussels.
- MOE and FLNR staff are collaborating with the Invasive Species Council of BC on this issue. The council is running a "Clean, Drain, Dry" program this summer as part of the FLNR funded "Take Action" program, and staff hired for this work have recently been trained in boat inspections for aquatic invasives like these mussels.
- Today a take action crew and Invasive Species Council of BC staff were on site to inspect the boat and trailer and collect photos and live and preserved samples of the mussels.
- A conference call was held this afternoon between staff from MOE fisheries section, Invasive Species Council of BC, Royal BC Museum (mussel specialist), Thomas Woolf (Aquatic Invasives Program Manager in Idaho) and myself as IMISWG chair. The photographs were reviewed and given these and the US state reports, quagga mussels have been confirmed. However, it is not known if the mussels are still viable, and if they are if they spawned during the 1 week the boat was in the water. Samples have been shipped to the RBC Museum who will work with UVic staff to dissect them to hopefully assess maturity.

- The implications here are incredibly high. Pelagic species like sockeye would be the most impacted by a mussel invasion as the mussels would filter most of the nutrients out of the lake and convert them to mussel biomass. The Adams River sockeye run, for example would likely be greatly diminished over time. Once established in Shuswap, they could easily invade downstream in the Fraser as well.
- If viable mussels are found on the boat, an aggressive containment and treatment program will be necessary if we are to successfully keep zebra mussels from establishing and spreading.
- If we adopt the protocols used in Idaho, the boat should be left dry for 30 days after decontamination- the boat owner is likely to object to this as he feels it was in the dry for almost a month before being launched in BC. However, the risks of being "almost" long enough and the likelihood of finding damp areas with mussels internally are not worth the chance.
- There is uncertainty with our regulatory ability to impound this boat for 30 days, and contain and treat the marina if need be.
- Given the uncertainty as to whether viable mussels were present on the boat at the time it was launched in Shuswap Lake, we discussed the possible containment steps that need to be considered (note that the boat did not leave the marina which is a fairly contained area).
 - Any boats being pulled out of the water should be decontaminated. 'Take Action' Crews are being mobilized for this purpose although the marine operator is expressing some concerns.
 - A diver should be used to inspect the piers and bottom in the area the boat was moored to see if any mussels moved onto the piers or dropped off the boat. MOE is asking DFO if they have any ability to support this.
 - Sampling for larval mussels should be conducted as soon as possible and continued every week or two through the summer. We have the gear, need to mobilize staff.
 - Given the high consequences if mussels do become established in Shuswap, we need to consider whether or not the marina bay should be screened off (isolated) and the area treated to kill any mussels present. This would obviously inconvenience all boaters at the marina and the business itself but the risk may warrant such a drastic action.
- Another conference call is planned for tomorrow to discuss information being collected over the next 24 hours and to determine a recommended course of action. DFO is being kept apprised by MOE staff.
- We can expect the media to pick up on this at some point especially once decontamination activities start (still working on this as equipment has to be registered and moved from the Kootenays). MOE and FLNR are working together on messaging but have not directly discussed with GCPE at this point.

There will be a funding need to adequately address this situation, including costs of commercial divers, rental of a decontamination unit, monitoring for larval mussels, etc.

Here are links to additional information:

1. The Columbia River Basin Interagency Invasive Species Response Plan: Zebra Mussels and Other *Dreissenid* Species (2011) has BC as a signatory a la Premier Campbell in 2009.
http://www.100thmeridian.org/Columbia_RBT.asp
2. Fact sheet on mussels: <http://nas.er.usgs.gov/queries/factsheet.aspx?speciesid=95>

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*Val Miller P.Ag.*

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